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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Haugland et al.

Serial No.: 09/557,275

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For: AZA-BENZAZOLIUM CONTAINING CYANINE DYES

Information Disclosure Statement

Assistant Commissioner for Patents
Washington, D.C. 20231

CERTIFICATE OF MAILING

I HEREBY CERTIFY THAT THIS PAPER AND THE DOCUMENTS REFERRED AS BEING ATTACHED OR ENCLOSED HEREWITH ARE BEING DEPOSITED WITH THE UNITED STATES POSTAL OFFICE ON July 26, 2000 AS FIRST CLASS MAIL IN AN ENVELOPE ADDRESSED TO : ASSISTANT COMMISSIONER FOR PATENTS, WASHINGTON D.C. 20231

ANTON E. SKAUGSET, REG. NO. 38,617

Dear Sir:

In accordance with their duty of disclosure under 37 CFR §§ 1.97 and 1.56, Applicants hereby disclose the following references.

US PATENTS

US Patent 4,883,867 to Lee et al (1989)
US Patent 4,437,198 to Lee et al (1990)
US Patent 5,321,130 to Yue et al (1994)
US Patent 5,410,030 to Yue et al (1995)
US Patent 5,436,134 to Haugland et al (1995)
US Patent 5,582,977 to Yue et al (1996)
US Patent 5,658,751 to Yue et al (1997)
US Patent 5,863,753 to Haugland et al (1999)
US Patent 5,616,502 to Haugland et al (1997)
US Patent 5,656,449 to Yue et al (1997)
US Patent 5,869,689 to Zhang et al (1999)
US Patent 5,401,847 to Glazer et al (1995)
US Patent 5,564,554 to Glazer et at (1996)
US Patent 5,760,201 to Glazer et al (1998)
US Patent 5,047,519 to Hobbs et al (1991)
US Patent 4,711,955 to Ward et al (1987)

US Patent 5,332,666 to Prober et al (1994)

US Patent 5,171,534 to Smith et al (1992)

US Patent 4,997,928 to Hobbs Jr. (1991)

US Patent 5,445,946 to Roth et al (1995)

US Patent 5,534,416 to Millard et al (1996)

US Patent 5,459,268 to Haugland et al (1995)

US Patent 4,665,024 to Mansour (1987)

US Patent 2,269,234 to Sprague (1942)

FOREIGN PATENTS

British Patent No. 870,753 (1961)

PCT Publication W0 94/05688 (1994)

REFERENCES (* if unavailable)

R. Haugland, MOLECULAR PROBES HANDBOOK OF FLUORESCENT PROBES AND RESEARCH CHEMICALS, Chapters 1-3 (1996)

Brinkley, BIOCONJUGATE CHEM., **3**, 2 (1992)

Brooker, et al., J. AM. CHEM. SOC., **64**, 199 (1942)

Heravi, et al., INDIAN J. CHEM. **36B**, 1025 (1997)

Smith et al. SULFUR LETTERS **17,** 197 (1994)

Chu-Moyer et al. J. ORG. CHEM. **60**, 5721 (1995)

Turner, J. ORG. CHEM. **48**, 3401 (1983)

Couture et al. J. HETEROCYCLIC CHEM. **24**, 1765 (1987)

Petric et al. J. HETEROCYCLIC CHEM. **14**, 1045, (1977)

Barlin et al. AUST. J. CHEM., **37**, 1729 (1984)

Saikachi et al. CHEM. & PHARM. BULL. **9**, 941 (1961)

Barlin AUST. J. CHEM. **36**, 983 (1983)

Foye et al., J. PHARM. SCI. **64**, 1371 (1975)

Khanna et al. J. ORG. CHEM. **60**, 960 (1995)

Ficken et al., "Diazaindenes and Their Quaternary Salts–Part I" pp 3202-3212 (1959)

Ficken et al., "Diazaindenes and Their Quaternary Salts–Part II" pp 584-588 (1961)

Smith et al., SULFUR LETTERS, **18**, 79 (1995)

Smith et al., CHEM INDUSTRY, **9**, 302 (1988)

Couture et al. HETEROCYCLES **22**, 1383 (1984)

Haugland, MOLECULAR PROBES, INC. HANDBOOK OF FLUORESCENT PROBES AND RESEARCH CHEMICALS, 1996

Haugland et al. "Coupling of Antibodies with Biotin" THE PROTEIN PROTOCOLS HANDBOOK, J.M. Walker, ed., Humana Press, (1996)

Haugland "Coupling of Monoclonal Antibodies with Fluorophores" METHODS IN MOLECULAR BIOLOGY, VOL. 45: MONOCLONAL ANTIBODY PROTOCOLS, W.C. Davis, Ed. (1995)

For the convenience of the Examiner, the references are listed on modified PTO Form 1449 (attached) and copies thereof are enclosed.

Among the above reference, the following primarily define the current state of the art, and/or describe applications in which the aza-benzazolium containing cyanine dyes of the invention may be utilized

US Patent 5,869,689 to Zhang et al (1999)

US Patent 5,047,519 to Hobbs et al (1991)

US Patent 4,711,955 to Ward et al (1987)

US Patent 5,332,666 to Prober et al (1994)

US Patent 5,171,534 to Smith et al (1992)

US Patent 4,997,928 to Hobbs Jr. (1991)

US Patent 5,445,946 to Roth et al (1995)

US Patent 5,534,416 to Millard et al (1996)

US Patent 5,459,268 to Haugland et al (1995)

US Patent 4,665,024 to Mansour (1987)

PCT Publication W0 94/05688 (1994)

R. Haugland, MOLECULAR PROBES HANDBOOK OF FLUORESCENT PROBES AND RESEARCH CHEMICALS, Chapters 1-3 (1996)

Brinkley, BIOCONJUGATE CHEM., **3**, 2 (1992)

Haugland, MOLECULAR PROBES, INC. HANDBOOK OF FLUORESCENT PROBES AND RESEARCH CHEMICALS, 1996

Haugland et al. "Coupling of Antibodies with Biotin" THE PROTEIN PROTOCOLS HANDBOOK, J.M. Walker, ed., Humana Press, (1996)

Haugland "Coupling of Monoclonal Antibodies with Fluorophores" METHODS IN MOLECULAR BIOLOGY, VOL. 45: MONOCLONAL ANTIBODY PROTOCOLS, W.C. Davis, Ed. (1995)

Among the above references, the following primarily describe structurally related cyanine

dyes that are useful as nucleic acid stains or protein stains, but that do not incorporate an aza-substituted benzazolium moiety, as required by the instant claims.

US Patent 4,883,867 to Lee et al (1989)
US Patent 4,437,198 to Lee et al (1990)
US Patent 5,321,130 to Yue et al (1994)
US Patent 5,410,030 to Yue et al (1995)
US Patent 5,436,134 to Haugland et al (1995)
US Patent 5,582,977 to Yue et al (1996)
US Patent 5,658,751 to Yue et al (1997)
US Patent 5,863,753 to Haugland et al (1999)
US Patent 5,616,502 to Haugland et al (1997)
US Patent 5,656,449 to Yue et al (1997)
US Patent 5,401,847 to Glazer et al (1995)
US Patent 5,564,554 to Glazer et at (1996)
US Patent 5,760,201 to Glazer et al (1998)

Among the disclosed references, the following primarily describe useful synthetic precursors or synthetic strategies for preparing the dyes of the invention:

US Patent 2,269,234 to Sprague (1942)
British Patent No. 870,753 (1961)
Brooker, et al., J. AM. CHEM. SOC., **64**, 199 (1942)
Heravi, et al., INDIAN J. CHEM. **36B**, 1025 (1997)
Smith et al. SULFUR LETTERS **17,** 197 (1994)
Chu-Moyer et al. J. ORG. CHEM. **60**, 5721 (1995)
Turner, J. ORG. CHEM. **48**, 3401 (1983)
Couture et al. J. HETEROCYCLIC CHEM. **24**, 1765 (1987)
Petric et al. J. HETEROCYCLIC CHEM. **14**, 1045, (1977)
Barlin et al. AUST. J. CHEM., **37**, 1729 (1984)
Saikachi et al. CHEM. & PHARM. BULL. **9**, 941 (1961)
Barlin AUST. J. CHEM. **36**, 983 (1983)
Foye et al., J. PHARM. SCI. **64**, 1371 (1975)
Khanna et al. J. ORG. CHEM. **60**, 960 (1995)
Ficken et al., "Diazaindenes and Their Quaternary Salts–Part I" pp 3202-3212 (1959)
Ficken et al., "Diazaindenes and Their Quaternary Salts–Part II" pp 584-588 (1961)

Smith et al., SULFUR LETTERS, **18**, 79 (1995)

Smith et al., CHEM INDUSTRY, **9**, 302 (1988)

Couture et al. HETEROCYCLES **22**, 1383 (1984)

In the event that there are any questions relating to this paper, or the application in general, it would be appreciated if the Examiner would telephone the undersigned agent concerning such questions so that the prosecution of the application may be expedited.

Respectfully submitted,

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